M-Gap Analysis of the Highest Clause Sensitivity in Japanese Relative Clauses[*]

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1 Introduction

Japanese relative clauses (RCs) show very different properties from English ones. In English RCs, the head of an RC can reconstruct into the theta position.

(1) the picture of himself that John thinks *t′* Bob likes *t* best

Himself in (1) can refer to either *John* or *Bob* with reconstruction, which is possible because the head moves from the base-generated position of *t*. If the coreference relation is determined at the base position, *himself* refers to *Bob*, and if the coreference relation is formed at the position *t′*, the antecedent becomes *John*. In contrast, the heads of Japanese RCs behave differently in short and long-distance RCs.

(2) [Soko$_i$-no   kogaisya{?-o/*-ga}   tyoosasita]   hutatu-no
    that.place-GEN subsidiary{-ACC/-NOM} investigation.did two.CLF-GEN
    daikigyoo$_i$
    big.enterprise
    with accusative: 'the two big enterprises that investigated its subsidiaries'
    with nominative: 'the two big enterprises that its subsidiaries'
                                                                  (Miyamoto 2017: 618)
(3) [Keisatu-ga [soko$_i$-no   kogaisya{-o/-ga}   tyoosasita]-to
     police-NOM   that.place-GEN subsidiary{-ACC/-NOM} investigation.did-C
    sinziteiru] hutatu-no   daikigyoo$_i$
    believe   two.CLF-GEN big.enterprise
    with accusative: 'the two big enterprises that the police believes investigated its subsidiaries'
    with nominative: 'the two big enterprises that the police believes that its subsidiaries investigated'   (*ibid*.: 619)

The ill-formedness of the nominative Case in the short RC (2) results from a weak crossover effect (WCO effect). Since the head serves as the object in the RC, movement to the spell-out position crosses the coreferent subject. The example with the accusative Case poses no problem since the movement is from the subject position, which is higher than the position of the coreferent pronoun. However, the long-distance RC in (3) is well-formed regardless of the Case. In the example with nominative Case, the movement of the head (object) crossing the coreferent subject is apparently allowed without inducing the WCO effect.

    This contrast between English and Japanese RCs suggests that Japanese RCs are not derived from movement. In fact, the genuine movement construction, scrambling, allows reconstruction of the moved element into the base position.

(4) [Taro-to Hanako-ga [John-to Mary-ga e_i inyoositeiru]-to omotteiru]
　　T.-COM H.-NOM　　J.-COM M.-NOM　cite-C　　　　think
　　otaga$_i$-no　　　ronbun$_i$
　　each.other-GEN paper
　　'each other's paper that Taro and Hanako think that John and Mary cite'

(5) [Otagai-no　　　ronbun$_i$-o Taro-to Hanako-wa [John-to Mary-ga e_i
　　each.other-GEN paper-ACC T.-COM H.-TOP　　J.-COM M.-NOM
　　inyoositeiru]-to omotteiru].
　　cite-C　　　　think
　　'Taro and Hanako think that John and Mary cite each other's paper.'

To account for asymmetries between short- and long-distance RCs in Japanese, it is assumed that the different derivations are involved in these RCs. Ishii (1991), Kizu (2005), and Miyamoto (2017) assume *pro* in long-distance RCs but not in short RCs.

(6) a. [[op [...op...]] DP]　　　　　　　　　　　　(short RC)
　　b. [[op [...op [...pro...]]...] DP]　　　　　　(long-distance RC)

In the derivation of short RCs (6a), the theta position of the head is occupied by a null operator, and it moves to the edge of the RC. In contrast, in the derivation of long-distance RCs (6b), a null operator is base generated in the highest clause, and *pro* is located in the theta position in a deeper clause. Since they assume that the null operators show the reconstruction positions, short RCs allow the head to be reconstructed into the theta position, while the head of long-distance RCs only reconstructs into the highest clause.

However, this analysis faces three problems. The first one is the assumption of a null operator. As Kayne (1994) and Aoun and Li (2003), among others, argue, it is assumed that the null operator does not explain the reconstruction effects and that copies of the head are necessary for reconstruction. Second, the authors do not explain why the null operator cannot move from the theta position in long-distance RCs. If allowed, long-distance RCs are expected to allow reconstruction of the head into the theta position, contrary to fact. Hence, they must explain why this option cannot be adopted. The last point is empirical. Consider the following examples:

(7) ?*[[soitu$_i$-ga　　　hihansita] onna-ga　　e_i nagutta] otoko$_i$
　　that.person-NOM criticized woman-NOM　hit　　man
　　'the man who the woman who criticized he hit'　　(Ishii 1991: 41)

(8) a. [[[soitu$_i$-ga   hihansita] onna-ga e_i gakusei-o
        that.person-NOM criticized woman-NOM   student-acc
        nagutta]-to uwasasiteiru] otoko$_i$
        hit-C   rumor.do   man
    'the man who the woman he criticized has spread the rumor that he hit
    a student.'
  b. [[[soitu$_i$-ga   hihansita] onna-ga   [gakusei-ga e_i
        that.person-NOM criticized woman-NOM student-NOM
        nagutta]-to uwasasiteiru] otoko$_i$
        hit-C   rumor.do   man
    'the man who the woman he criticized has spread the rumor that a stu-
    dent hit him.'

(7) shows an example of a short RC ill-formed by the WCO effect. The ex-
amples in (8) are long-distance RCs, and the highest clause sensitivity be-
comes relevant. Note that (4) indicates that the head of a long-distance RC is
reconstructed under the highest subject, implying that the null operator moves
from the position under the subject to the highest edge of the RC. However,
the examples in (8) are expected to be ill-formed by the WCO effect since the
movement of the null operators crosses the coreferent pronoun.

   In the following section, I propose a unified analysis of short- and long-
distance RCs.

2   Analysis of RCs

First, I introduce Form Copy, on which the analysis is based. Chomsky
(2021) focuses on the long-standing puzzle of how to distinguish copies and
repetitions.[1] The analyses thus far (Chomsky 2008, 2015) have distinguished
them based on syntactic phase-based memory. For example, the two inscrip-
tions of *John* are repetitions in (9a) but copies in (9b) because external Merge
introduces them independently in the former, and internal Merge connects
them in the latter.

(9) a. John praised John.
   b. John was praised John.

In this framework, syntax must store derivational history to distinguish be-
tween the two relations. However, Chomsky (2021) reconsiders this idea and
suggests that syntax has a strictry-Markovian property, which means there is
no memory in syntax. In this system, different syntactic operations cannot be

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[1] For the recent review of this topic, see Collins and Groat (2018).

assumed to yield different relations. Chomsky proposes an operation Form Copy to assign a copy relation between two syntactic objects. By Form Copy, the two inscriptions of *John* in (9b) are assigned a copy relation. In contrast, those in (9a) cannot be copies. Chomsky explains this contrast in terms of what he refers to as the univocality of theta assignment. If the two inscriptions of *John* are copies in (9a), the single verb *praise* assigns the two different theta roles to a single argument, which the univocality condition precludes. Hence, the copy relation cannot be assumed in (9a).[2] Since the copy relation is dissociated from the operation intrernal Merge, this system allows a copy relation between the syntactic objects introduced by external Merge. Consider the following example of control:

(10) a. John tried to win.
      b. [John [tried [John to win]]]

(10b) shows the *v**P structure in (10a). As discussed, Chomsky (2021) does not allow syntactic memory, and it is unclear which operation (external or internal Merge) is applied to each inscription of *John*. Instead, the configuration is evaluated based on duality of semantics. This ensures the division of labor of Merge: external Merge constitutes the argument structure, and internal Merge derives the discourse structure. Since both inscriptions of *John* are located in the theta positions in (10), they must be introduced by external Merge. Nevertheless, a copy relation can be assumed between them to derive the control construction. Since this type of copy relation is available by virtue of the lack of syntactic memory, Chomsky calls this relation M(arkovian)-gap.

The two copy relations behave differently at the interfaces.

(11) a. one interpreter each seems [*t* to have been assigned to the diplomats]
      b. *one interpreter each tried [PRO to be assigned to the diplomats]
                                                          (Chomsky 2021: 22)

For the desired distributive interpretation, *one interpreter each* has to be in the same clause as *the diplomats* in (11). In (11a), with the traditional movement copy relation, the reconstruction is available, and the sentence is well-formed. By contrast, (11b) involves an M-gap with two inscriptions of *one interpreter each* introduced by external Merge, because each inscription

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[2] The univocality condition is reminiscent of the theta-criterion, which forces the one-to-one relation between an argument and a theta-role. However, as we will see later in the derivation of the control construction, a single argument can have more than one theta-role, and the theta-criterion does not allow such a theta-assignment while the univocality does.

receives a theta role. Chomsky argues that reconstruction requires movement, and, (11b) becomes ill-formed because the requirement of *one interpreter each* is not satisfied.

The analysis proposed here is based on Form Copy and M-gaps; however, I depart from Chomsky's original idea of reconstruction and assume the following restriction:

(12) The interpretation systems can only trace the same kind of operation.

(12) suggests that reconstruction can take place at the interfaces as long as the same type of relation is involved. However, this departure does not impair Chomsky's analysis. (13) shows the configuration of (11).

(13) a. one interpreter each seems [to have been assigned e to the diplomats]
        movement
     b. *one interpreter each e tried [to be assigned e to the diplomats]
        movement   M-gap

In (13a), *one interpreter each* is base generated at position e, receiving a theta role from *assgined*. It then moves to the spec of TP, the subject position. Since only one type of copy relation is involved, reconstruction can occur. In (13b), an inscription of *one interpreter each* merges externally at lower e, the theta position of *assgined*. At the same time, however, the other inscription also merges externally at the position of higher e, receiving the theta-role from *tried*. The higher inscription then moves to the spec of TP. Since the entire copy relation consists of two different relations, *one interpreter each* cannot reconstruct into the lowest position at the interfaces by (12).

Note that (12) does not exclude reconstruction by successive-cyclic movements. (14) shows the schema of (1) and (5).

(14) [...XP...[...XP...[...XP...]]]   (order irrelevant)
        movement movement

As all copy relations are the same type, the moved object can be reconstructed into the lower positions. Thus, the moved object can be interpreted either at an intermediate or base-generated position in (1) and (5).

Next, I propose an analysis of Japanese RCs and the highest clause sensitivity in terms of (12). I summarize the assumptions as follows:

(15) a. When a phase is formed, the lower phase becomes inaccessible.
                                    (Chomsky 2000, Saito 2017)

b. The head is base generated outside the RC. Form Copy connects the outer head with another copy inside the RC.

c. DP externally merged with a clause receives a topic interpretation.

d. There is no operator in Japanese RCs because they are TP.

(Saito 1985)

e. The WCO effect is not operative if the theta position is not visible for reconstruction.

(15a) concerns the parameter on feature inheritance discussed by Saito (2017). According to Chomsky (2008, 2015), a head immediately lower than a phase head inherits phasehood along with unvalued features [uF]. Consequently, the second phase is derived.

(16) a. [X[uF][PH] [Y...]]
      b. [X[PH] [Y[uF][PH]...]]

The second phase them becomes invisible to the derivation. Saito explains why the domain of the phase impenetrability condition is assumed to be the phase complement, not the phase itself. In this analysis, the invisible domain comprises the entire lower phase. Saito further argues that since Japanese lacks [$u$phi] (or other [uF] as well), there is no feature inheritance or the derived phase head. Thus, the domain of the phase impenetrability condition in Japanese is smaller than that in English. In line with the common assumption that v*P and CP are phases, the domain of the phase impenetrability condition in Japanese is the lower v*P (CP), instead of the phase complement.

Next, I assume in (15b) that the head of an RC is base generated outside the RC and assigned a copy relation with the inner head (cf. Sauerland (2003)). Thus, the two inscriptions of NP in (17) do not have a movement relation.

(17) [$_{NP}$ [$_{RC}$ ...NP...] NP]

This derivation brings up the issue of the duality of semantics. Although external Merge is called for theta-role assignment, external Merge of the head with the RC does not involve theta-assignment. Moreover, Chomsky (2021) suggests that the necessary condition for the M-gap relation is that both inscriptions have a theta role. I assume that external Merge of NP with a clause assigns the NP topic interpretation, which serves like the theta role and mediates the M-gap relation. This assumption is supported by empirical evidence. As Kuno (1973) argues, Japanese RCs have a similar interpretation of topic construction. If we assume that the (aboutness) topic is also derived by external Merge with a clause, similarity is captured. In English, Radford

(2018) offers some examples of gapless topics, which require external Merge of the topic with a clause, because there is no gap from which the topic moves.

(18) Defoe, even I could have scored that goal.   (Radford 2018: 42)

Assumption (14d) is based on Saito's (1985) classical observations. This explains why Japanese RCs do not employ the movement of the head unlike English RCs. Following the common assumption, I suggest that CP is the projection for operator and Ā movements. Thus, since Japanese RCs lack this projection, Japanese must derive RCs in a different way from English.

The last assumption argues that the WCO effect is not a condition of movement but of the reconstruction. Consider the following examples of parasitic gaps:

(19) a. *?This is the man$_i$ I interviewed t_i before reading the book you gave to pg_i.   (Chomsky 1986: 55)
    b. Who$_i$ did you stay with t_i [before [his$_i$ wife] had spoken to pg_i]
                          (Lasnik and Stowell 1991: 691)

(19a) shows that this involves movement inside the adjunct to the edge. The movement crosses a complex NP island, and the derivation crashes. Nevertheless, (15b) is well-formed without the WCO effect. Based on Chomsky (2021), I assume the following derivation of (19b):

(20)   M-gap
    Who did you stay with e [e before his wife had spoken to e]
              movement   movement

With the derivation shown above, *who* cannot reconstruct into the theta position in the adjunct since two copy relations are involved. If the WCO effect literally blocked the movement across the coreferent pronoun, the sentence would be ill-formed, contrary to fact. Thus, (15e) is necessary to explain the correct behaviors of the WCO effect.

With these assumptions, I first propose the derivation of short RCs.

(21) [$_{NP}$ [$_{RC}$ ...NP...] NP]
                M-gap

According to (15a), Japanese allows the internal NP in v*P to participate in the copy relation in the next phase. Hence, the outer head externally-merged with the RC and the inner head at the theta-position can form a copy relation.

Since there is only one uniform copy relation here, reconstruction occurs, and the WCO effect is observed in short RCs, as shown in (2) and (7). Next, (22) illustrates the structure of long-distance RCs.

(22) [$_{NP}$ [$_{RC}$ ...NP [$_{phase}$ ...NP...]...] NP]

M-gap

movement

According to (15a), the phase becomes inaccessible after the next higher phase is formed. As the derivation of short RCs suggests, the head must be in the v*P domain to be accessible to Form Copy with the NP outside the RC. Then, the inner NP must move in a long-distance RC, which creates nonuniform copy relation. Consequently, (12) allows only the reconstruction into the highest clause, tracing the M-gap relation. Since the theta position is invisible to reconstruction, this proposal also explains why the WCO effect is not observed in long-distance RCs.

3 Concluding Remarks

This paper has started with the different reconstruction behaviors between Japanese short RCs and long-distance RCs. These differences have forced the previous researchers to assume different derivations for Japanese RCs. However, their proposals lack a principled explanation and fail to explain why such differences emerge. In this paper, I have proposed a new analysis of Japanese RCs with Chomsky's (2021) Form Copy. Considering that reconstruction can take place with a uniform copy relation, I have derived the highest clause sensitivity for long-distance RCs, providing a correct explanation for the WCO effect. Another interpretive rule proposed here allows external Merge of a nominal with a clause, which derives topic interpretation. This assumption captures not only the similarity between RCs and aboutness topics in Japanese but also English gapless topics.

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